

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Kazuhiko Ueda et al.

Serial No.: 10/586,858

Art Unit: 1796

Filed : October 27, 2006

Examiner: LOEWE, ROBERT S

Title : PRESSURE SENSITIVE ADHESIVE COMPOSITION

DECLARATION UNDER RULE 132

Honorable Commissioner of Patents and Trademarks,  
Alexandria, Virginia 22313-1450

Sir:

I, Toyohisa Fujimoto, a citizen of Japan and having postal mailing address of c/o Kaneka Corporation, 1-8, Miyamae-cho, Takasago-cho, Takasago-shi, Hyogo 651-2137, Japan, declare and say that:

In March, 1999, I was graduated from Graduate School of Engineering, Tohoku University, and received a master's degree in the field of chemistry;

Since April, 1999, I have been employed by Kaneka Corporation and engaged in the work of research and development of modified silicone for sealing materials in High Performance Polymers Division;

I am familiar with the technical field of the present invention;

I respectfully submit herewith my exact report;

### Object

The experiments are

1) to demonstrate that the curable compositions disclosed in Toda et al. (JP5-302026) or Watabe et al. (JP5-59267) provide cured products having low adhesive strength; and  
2) to demonstrate that the compositions which contain components (A) and (B) but do not contain component (C) of the present invention provide cured products having low adhesive strength.

### Experiments

A) The curable composition in Example 2 of Toda et al.

The curable composition in Example 2 of Toda et al. was examined since the adhesive strength of the cured product is supposed to be higher than that of any other Example.

The curable composition was prepared from the components listed in the table below.

	Parts by weight
Polymer (a) (Kaneka Silyl 5A03)	100
Calcium carbonate (Whiton SB)	100
Titanium oxide (Tipaque R820)	20
Diethyl phthalate (DOP)	30
Vinyltrimethoxysilane (A171)	1
Modified rosin ester resin (KE311)	20
Dibutyltin dilaurate (Neostann U-100)	3

More specifically, to a mixture of Silyl 5A03 and diethyl phthalate were added KE311 which was heated and melted in advance, Whiton SB which was dried at 120°C for 2 hours in advance, and Tipaque R820 in this order. The mixture was kneaded by a three-shaft roller and the rest of the components were added. The resultant mixture was uniformly kneaded by a three-shaft roller to obtain a composition. The viscosity of the composition was measured at 23°C by a type B viscometer. A pressure

sensitive adhesive film was prepared and evaluated as described in page 19, lines 17 to 20 and page 20, lines 19 to 27 in the specification of the present application.

B) The curable composition in Example 2 of Watabe et al.

Additive B in Example 2 of Watabe et al. was prepared in accordance with paragraph [0043] of Watabe et al. Namely, a ring opening polymerization of propylene oxide was carried out in the presence of compound metal cyanide complex catalyst and 2-ethylhexanol as an initiator. A polyoxypropylene monool with a molecular weight of 3,000 was obtained and was reacted with an equimolar amount of methyldimethoxysilylpropyl isocyanate to obtain the Additive B.

A composition corresponding to the one in Example 2 of Watabe et al. was prepared from the components listed in the table below and in accordance with paragraph [0045] of Watabe et al. The polymer in the table is a polyoxypropylene polyether compound having 2.4 methyldimethoxysilylpropyl groups on average at the end of the molecule of polyoxypropylene triol, which was obtained by subjecting propylene oxide to a polymerization in the presence of compound metal cyanide complex catalyst and glycerin as an initiator.

	Parts by weight
Polymer containing 2.4 hydrolyzable silicon groups per molecule (Mn: 30,000)	100
Additive B (Mn: 3,000; methyldimethoxysilyl group in one end of the molecule)	30
Dibutyltin dilaurate	1

More specifically, Additive B and dibutyltin dilaurate were added to the polymer and a uniform composition was obtained. The viscosity of the

composition was measured at 23°C by a type B viscometer. A pressure sensitive adhesive film was prepared and evaluated as described in page 19, lines 17 to 20 and page 20, lines 19 to 27 in the specification of the present application.

C) A composition which contains components (A) and (B) but does not contain component (C) of the present invention

A composition was prepared from the components listed in the table below.

	Parts by weight
Polymer (A-4)	100
Additive B (Mn: 3,000; methyldimethoxysilyl group in one end of the molecule)	30
Titanium catalyst (Orgatix TC-100)	4

More specifically, polyoxypropylene glycol with a number average molecular weight of 31,000 (on the polystyrene equivalent basis) as determined by GPC was prepared by polymerizing propylene oxide using Actcol P-23 as an initiator, together with zinc hexacyanocobaltate-glyme complex. Each terminal hydroxyl group was reacted with allyl chloride to introduce the unsaturated group into all termini. Thereafter, the unsaturated groups were reacted with 0.75 equivalent of methyldimethoxysilane to give the methyldimethoxysilyl group-terminated polymer (A-4) having a number average molecular weight of 31,800 and having 1.5 methyldimethoxysilyl groups on average per molecule. To the polymer (A-4) were added Additive B prepared as above and the catalyst to obtain a composition. The viscosity of the composition was measured at 23°C by a type B viscometer. A pressure sensitive adhesive film was

prepared and evaluated as described in page 19, lines 17 to 20 and page 20, lines 19 to 27 in the specification of the present application.

### Results

The viscosity and the adhesive strength of each composition are shown below.

	A) Example 2 of Toda et al.	B) Example 2 of Watabe et al.	C) Without component (C)
Viscosity (Pa·s)	67.2	12.6	20.4
Adhesive strength (N/25mm)	0.1	0.1	2.5

Experiment A) shows that the compositions of Toda et al. provide cured products having a very low adhesive strength. The reference Toda et al. is directed to sealing materials and the compositions are not suitable for pressure sensitive adhesive products. It is unpredictable that addition of component (B) of the present invention to the compositions of Toda et al. increases the adhesive strength of the cured products.

The reference Watabe et al. is also directed to sealing materials. Experiment B) shows that the cured products obtained from the compositions disclosed in Watabe et al. have a very low adhesive strength. It is unpredictable that addition of component (C) (tackifier resin) of the present invention to the compositions of Watabe et al. increases the adhesive strength of the cured products.

Experiment C) shows that the compositions of the present invention without component (C) provide cured products having a low adhesive strength.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signed this 29th day of October, 2010

*Toyohisa Fujimoto*

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